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CONDITION SURVEY, FORBES AIR FORCE BASE, KANSAS.(U)
JUN 73 R D JACKSON, H H BAKER, G D GILMAN

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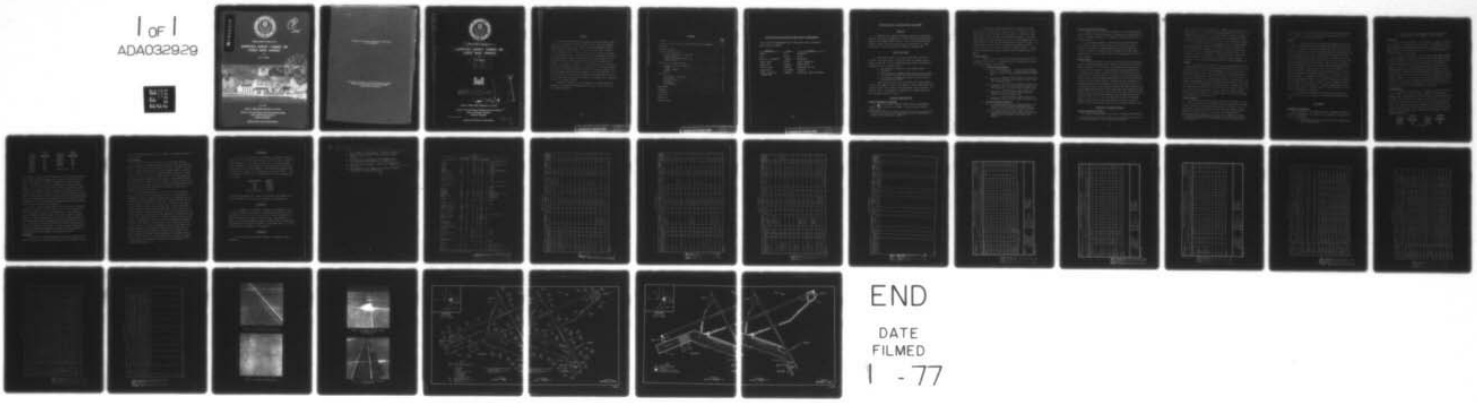

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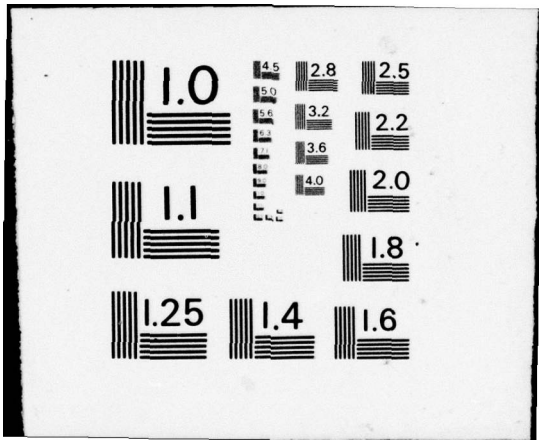
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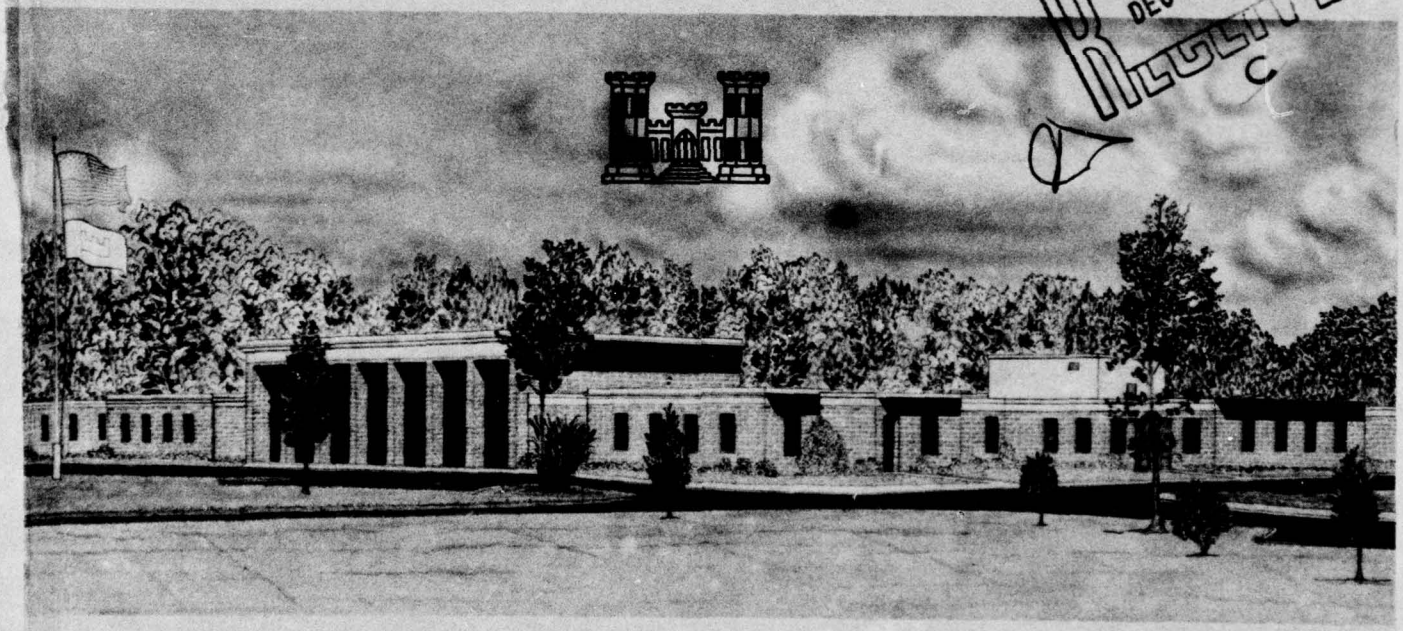
CONDITION SURVEY, FORBES AIR FORCE BASE, KANSAS

by

R. D. Jackson



June 1973

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Soils and Pavements Laboratory
Vicksburg, Mississippi

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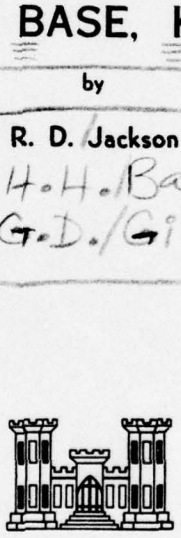
(9) MISCELLANEOUS PAPER S-73-44

(6) CONDITION SURVEY, FORBES AIR FORCE BASE, KANSAS.

by

(10) R. D. Jackson
H. H. Baker
G. D. Gilman



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(11) June 1973 (12) 34 p.

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ARMY-MRC VICKSBURG, MISS

Foreword

The study reported herein was conducted under the general supervision of the Engineering Design Criteria Branch, Soils and Pavements Laboratory, of the U. S. Army Engineer Waterways Experiment Station (WES), Vicksburg, Mississippi. Personnel involved in the condition survey were Messrs. R. D. Jackson, K. A. O'Connor, and S. R. Rowland, Jr., of the WES and Mr. H. H. Baker of the U. S. Army Engineer Division, New England (NED), Waltham, Massachusetts. The main portion of this report was prepared by Mr. Jackson under the general supervision of Messrs. J. P. Sale, R. G. Ahlvin, R. L. Hutchinson, and P. J. Vedros of the Soils and Pavements Laboratory. That portion of the study pertaining to frost action was carried out by the U. S. Army Cold Regions Research and Engineering Laboratory (CRREL), Hanover, New Hampshire, with the assistance of the Foundations and Materials Branch, NED. The section of the report concerning frost action was prepared by Mr. Baker and by Mr. G. D. Gilman of CRREL.

COL Ernest D. Peixotto, CE, was Director of the WES during the conduct of the study and preparation of the report. Mr. F. R. Brown was Technical Director.

Contents

Conversion Factors, British to Metric Units of Measurement

British units of measurement used in this report can be converted to metric units as follows:

Multiply	By	To Obtain
inches	2.54	centimeters
feet	0.3048	meters
miles (U. S. statute)	1.609344	kilometers
square inches	6.4516	square centimeters
square feet	0.092903	square meters
miles per hour	1.609344	kilometers per hour
pounds (mass)	0.45359237	kilograms
pounds (force) per square inch	0.6894757	newtons per square centimeter

CONDITION SURVEY, FORBES AIR FORCE BASE, KANSAS

Authority

1. Authority for conducting condition surveys at selected airfields is contained in amendment to FY 1972 RDTE Funding Authorization (MFS-MC-5, 16 February 1972), subject: "Air Force Airfield Pavement Research Program," from the Office, Chief of Engineers, U. S. Army, Directorate of Military Construction, dated 18 February 1972.

Purpose and Scope

2. The purpose of this report is to present the results of a condition survey performed at Forbes Air Force Base (FAFB), Kansas, during 1-6 May 1972. The following three major areas of interest were considered in this condition survey:

a. The structural condition of the primary airfield pavements.

b. The condition of pavement repairs and the types of maintenance materials that have been used at this airfield.

c. Any evidence of detrimental effects of frost action to the pavement facilities.

3. This report is limited to a presentation of visual observations of the pavement conditions, discussion of these observations, and pertinent remarks with regard to the performance of the pavements. No physical tests of the pavements, foundations, or patching materials were performed during this survey.

Pertinent Background Data

General description of airfield

4. FAFB is located in Shawnee County, Kansas, approximately 5 miles* south of the city of Topeka. A vicinity map is shown in plates 1 and 2.

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* A table of factors for converting British units of measurement to metric units is presented on page vii.

5. In May 1972, the airfield facilities consisted of a NW-SE (13-31) runway, a NE-SW (21-03) runway, a series of taxiways, a large parking apron, three warm-up aprons, a washrack, a calibration hardstand, and a series of hangar access aprons and taxiways. The NW-SE runway was 200 ft wide and 12,800 ft long; the NE-SW runway was 200 ft wide and 8,000 ft long; and the taxiways were at least 75 ft wide. The parking apron was 900 to 1,125 ft wide and approximately 3,760 to 5,300 ft long. A layout of the airfield is shown in plate 1. A pavement plan indicating the type pavement on each facility is shown in plate 2.

Previous reports

6. Previous reports concerning the airfield pavement facilities at FAFB are listed below. Pertinent data were extracted from them for use in this condition survey report.

a. Condition survey reports:

(1) Ohio River Division Laboratories, CE, "Preliminary Report of Rigid Pavement Condition Survey of Topeka Air Base, Pauline, Kansas," August 1947, Cincinnati, Ohio.

(2) _____, "Report of Rigid Pavement Condition Survey, Forbes Air Force Base, Pauline, Kansas," April 1951, Cincinnati, Ohio.

(3) _____, "Report of Rigid Pavement Condition Survey, Forbes Air Force Base, Kansas," October 1957, and Addendum No. 1, October 1957, Cincinnati, Ohio.

(4) _____, "Condition Survey Report, Forbes Air Force Base, Kansas," February 1961 (survey performed in 1960), Cincinnati, Ohio.

(5) _____, "Condition Survey Report, Forbes Air Force Base, Kansas," January 1965, Cincinnati, Ohio.

b. Pavement evaluation reports:

(1) U. S. Army Engineer Division, Missouri River, CE, "Pavement Evaluation Report, Topeka Airfield, Pauline, Kansas," December 1943, Omaha, Nebraska.

(2) U. S. Army Engineer District, Kansas City, CE, "Airfield Evaluation Report, Forbes Air Force Base, Topeka, Kansas," December 1959, Kansas City, Missouri.

Design and construction history

7. Details of the construction history of the airfield pavements (extracted from the reports referenced in paragraph 6) are presented in table 1. Pavement thicknesses, descriptions, and other details are presented in table 2.

8. The original pavements, constructed during 1942 and 1943, were designed to support either 40,000- or 60,000-lb wheel loads. Pavements constructed or strengthened during the period 1952-55 were designed to support a 100,000-lb gear load supported on dual wheels spaced 37.5 in. center to center, with a tire contact area of 267 sq in. for each wheel.

Traffic history

9. A detailed traffic record for the airfield was not available; however, some approximation of the traffic can be made from the records that are available. From 1955-1965, the airfield was used primarily by B-47 and KC-97 aircraft. During the period January 1957-May 1957, an average of 304 cycles* per month of B-47 aircraft traffic and 147 cycles of KC-97 aircraft traffic were applied. For the period January 1958-June 1960, there were approximately 380 cycles of B-47 traffic and 85 cycles of KC-97 traffic applied. Assuming that the monthly level of traffic from 1955-1957 was the same as that for the first 4 months of 1957 and that the level from 1958-June 1965 was the same as that for the period January 1958-June 1960, the airfield would have sustained approximately 45,000 cycles of B-47 traffic and 12,000 cycles of KC-97 traffic. Since July 1965, the aircraft primarily using the airfield have been C-130's, C-135's, B-57's, and some transient aircraft. The average number of cycles per month for these aircraft have been as follows: C-130's, 2,900; C-135's, 263; B-57's, 800; and transient aircraft, 262.

Conditions of Pavement Surfaces

Pavement inspection procedure

10. The following procedure was used in conducting the inspection

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* A cycle of operation is one landing and one takeoff.

of the rigid pavements. Representative features were selected for detailed inspection. The features were then inspected slab* by slab, and the defects were recorded. The locations of the individual pavement features, the inspection starting points, and the directions in which the pavements were inspected (shown by arrows) are indicated in plate 1.

11. The results of the rigid pavement survey for those features that were inspected in detail are presented in table 3. This table shows a quantitative breakdown of the various types of defects and a condition rating for each pavement feature inspected in detail. The procedures used for determining the condition rating of a pavement are given in Appendix III of Department of the Army Technical Manual TM 5-827-3, "Rigid Airfield Pavement Evaluation," dated September 1965.

Runways

12. The NW-SE (13-31) runway was in very good condition based on the percentage of slabs with no major defects; however, it was in a poor to failed condition based on the percentage of slabs with no defects. Combining the two ratings, the general condition of the runway would be fair. The condition of the NE-SW (03-21) runway, which is used primarily by C-130 aircraft for assault-type landings, was very good. This runway contained many slabs with longitudinal breaks, most of which were in the areas where the pavements had been overlaid. Neither of the runways had many slabs that were free of both major and minor defects. The minor defects consisted mostly of spalls, pop-outs, and map cracking. Several slabs were replaced in the center lanes of the interior portion of the NW-SE (13-31) runway in 1967.

Primary taxiways

13. The primary taxiway system is composed of taxiways 1, 3, and 3A. However, the portion of the NE-SW (03-21) runway between the NW-SE runway and taxiway 3 has been used extensively as a taxiway. Most of the defects in taxiway 1 that were noted in the 1965 report (see paragraph 6) had been corrected, and only one major defect remained. Several slabs were replaced in the center lane of taxiway 3 in 1966.

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* A slab is the smallest unit, containing no joints, of a given pavement feature.

The taxiway was in excellent condition at the time of the 1972 inspection. Taxiways 3 and 3A were in very good condition, with only 30 major defects noted in the two features.

Aprons

14. The parking aprons were in very good condition, even though the number of major defects had increased considerably since the 1960 survey. The distressed area along the east side of the apron north of taxiway 2 referred to in the 1965 condition survey was overlaid with asphaltic concrete (AC) in 1969. This area was in very good condition, even though there was some reflection cracking. Another area referred to in the 1965 survey, located along the east side of the parking apron between taxiways 3 and 4, was overlaid in 1969 with AC in some areas and with tar rubber (TR) in other areas. Even though some reflection cracking had begun in this area, it was in very good condition. In 1971, a portion of the parking apron was overlaid with TR to cover an area that contained a considerable amount of "D" cracking and a large number of spalls. The remainder of the parking apron was in good to very good structural condition, even though "D" cracking and pop-outs were prevalent (photos 1 and 2). Photo 3 shows AC patches at the corners of slabs of the parking apron. Portland cement concrete (PCC) patches along joints in the apron (photo 4) had been placed to repair areas that contained "D" cracking.

15. The remaining pavements not specifically mentioned above were in good to very good condition, even though many contained pop-outs.

Frost Action

Objectives of inspection

16. One member of the team inspected the pavement facilities for evidence of detrimental frost effects. The objectives of the inspection were to determine:

a. Any adverse effects of frost heave to the pavements during the winter months.

b. Any traffic-induced failures that might be related to thaw weakening of the subgrades or base courses.

Frost heave

17. The airfield pavements were inspected for surface irregularities indicative of differential frost heaving. This inspection, which was conducted on 3 May 1972, was several weeks subsequent to the frost-melting period at a time when evidence of frost heaving would not be apparent except in severe cases.

18. Base Civil Engineering Office personnel were queried regarding the development of undesirable pavement surface unevenness during the winter months. The consensus of the survey team was that the runway surface exhibited minor roughness detectable in an automobile at speeds of up to 60 mph. This unevenness appeared to be due to the slight settlement of certain pavement slabs rather than the result of frost heaving. The flexible shoulder pavements were smooth, and base personnel reported that no problems had been experienced with airfield pavement roughness. On the basis of the evidence available, it appears that none of the airfield pavements have been adversely affected by frost heave. The absence of detrimental differential frost heaving is believed to be due to uniform subgrade soil conditions.

Freezing indices

19. A design freezing index of 569 degree-days has been determined for FAFB. This value is based on temperature data from the Topeka, Kansas, Municipal Airport Weather Station and is the average of the three coldest winters in the past 30 years (1959-60, 1961-62, and 1962-63). Average daily temperatures for transition months at both ends of the freezing seasons were considered in this determination. Seasonal freezing indices for Topeka since the 1954-55 winter and the mean index are tabulated below. These values are based on average monthly temperatures.

Freezing Season	Freezing Index degree-days	Freezing Season	Freezing Index degree-days
1955-56	254	1957-58	209
1956-57	276	1958-59	322

(Continued)

Freezing Season	Freezing Index degree-days	Freezing Season	Freezing Index degree-days
1959-60	410	1967-68	179
1960-61	130	1968-69	285
1961-62	552	1969-70	335
1962-63	437	1970-71	390
1963-64	266	1971-72	204
1964-65	133		
1965-66	189	30-year mean	105
1966-67	56		

These indices, being determined entirely from average monthly temperatures, generally reflect somewhat lower numerical values than do indices which consider average daily temperatures for the transition months. (The three values used to determine the design index are, for example, 558, 628, and 522 for 1959-60, 1961-62, and 1962-63, respectively.) The indices do, however, indicate the relative severity of the winters since the construction of the heavy-load pavements at FAFB. Since the three coldest winters in the past 30 years all occurred during this period, the pavements have experienced freezing conditions corresponding to the most severe recurrence frequencies that are considered in the Corps of Engineers design criteria.

20. For a design freezing index of 569 degree-days, a combined thickness of pavement and base course of 43 to 50 in., depending on base and subgrade water content and density and, to some extent, on pavement thickness, would be required to prevent subgrade freezing. Similarly, a combined thickness of 33 to 41 in. would be required to meet criteria for limited subgrade frost penetration design. The 16 to 32 in. of subgrade protection provided by the heavy-load pavements at FAFB are not adequate with respect to limited subgrade frost penetration design criteria; accordingly, performance must be compared with reduced subgrade strength design and evaluation criteria.

Groundwater

21. Evidence of high groundwater was observed in several of the pavement features, and base personnel reported that free water had been

encountered frequently under the slab or base course/subgrade interface during repairs.

Thaw weakening

22. The extent of thaw weakening of the subgrades and base courses could not be readily determined by inspection of the pavements. Pavement failures usually are repaired or otherwise corrected soon after they occur and consequently are not easily examined during a condition survey. However, even where an examination can be made, it is seldom possible to determine whether a failure resulted from thaw weakening or from pavement design deficiencies with respect to the "normal" period subsoil and traffic conditions. Some limited perception of thaw weakening effects can be gained, however, by examining the performance of certain pavement features with what might be expected in the light of applicable frost design criteria.

23. The heavy-load facilities at FAFB are all PCC pavements (some of which have been overlaid with AC or TR). As is stated in paragraph 20, reduced subgrade strength design and evaluation criteria are applicable for performance comparisons. These design methods require that rigid pavement slab thickness be determined on the basis of the frost-melting period subgrade modulus (k_f). For the low design freezing index and uniform subgrade conditions at FAFB, current design criteria require a nonfrost-susceptible base course not less than 4 in. in thickness. The slab thicknesses are adequate for frost-condition operation of the design gear load and assembly (100,000 lb loaded on dual wheels, see paragraph 8); however, most of the pavements were placed directly on the subgrade. The principal aircraft using the airfield (B-47's, KC-97's, and C-130's, paragraph 9) have not overloaded these pavements during the frost-melting periods, and the small number of observed major structural defects (paragraphs 12-14) indicate that thaw weakening has not been a significant factor in pavement performance. No B-52 traffic has been reported at FAFB; however, operation of this aircraft would grossly overload most of the pavements, even for nonfrost conditions.

Maintenance

24. Due to the pop-outs and D-cracking, maintenance of the pavements at FAFB is generally conducted on a continuing basis. D-cracking usually progresses into corner, longitudinal, and transverse spalls. It was reported that maintenance costs for the period 1962-1967 averaged approximately $600,000 annually. This maintenance consisted generally of joint sealing, slab replacement, and spall patching. A small AC overlay was placed in 1964. Maintenance costs since 1967 have been as fo lows:

Fiscal Year	Amount
1968	$223,695
1969	284,271
1970	630,828
1971	90,178
1972 (10 months)	491,249

The higher maintenance costs shown for FY 1970 and 1972 resulted from placing overlays on the apron areas referred to in paragraph 14.

Evaluation

25. A summary of the pavement evaluation is presented in table 4. Previous evaluations were updated to include those aircraft that have been added to the Air Force inventory since the last survey and to exclude those that are no longer in the inventory. The evaluation is based on the pavement thickness, flexural strength (PCC), base and subbase thickness and strength, strength of the subgrade (CBR or k value), and the structural condition of the pavement.

Conclusions

26. The following statements summarize the findings of this inspection:

The following summarize the findings of this inspection: (1) The Portland cement concrete (PCC)

a. The PCC pavements were in good to excellent condition based on the percentages of slabs containing major defects; (2)

b. D-cracking was very prevalent, with practically all slabs containing some degree of this defect; (3)

c. Some reflection cracking was noted in the 1969 ~~AC~~ asphaltic concrete (AC) overlay areas; and (4)

d. Thaw weakening of the subgrade has not been a significant factor in pavement performance.

Table 1

Construction History

Pavement Facility	Dimensions: Length ft	Dimensions: Width ft	Pavement: Thickness in.	Pavement: Type	Construction: Year(s)	Construction: Agency	Remarks
N-S runway	6,525	150	10-8-10	PCC	1942	CE	Overlaid and now part of parking apron
NE-SW runway	6,525	150	10-8-10	PCC	1942	CE	Overlaid; still in use
NW-SE runway	6,525	150	10-8-10	PCC	1942	CE	Rebuilt; now taxiway 3
Taxiway 1	3,075	50	9-7-9	PCC	1942	CE	Abandoned
Taxiway 2	2,990	50	9-7-9	PCC	1942	CE	Abandoned
Taxiway 4	350	50	9-7-9	PCC	1942	CE	Now part of parking apron area
Taxiways 3 and 5	Varies	50	9-7-9	PCC	1942	CE	Now part of parking apron area
Taxiways 6 and 7	Varies	50	9-7-9	PCC	1942	CE	Rebuilt
Taxiways 8, 9, and 10	Varies	50	9-7-9	PCC	1942	CE	Abandoned
Original parking apron	3,200	600	9-7-9	PCC	1942	CE	Overlaid
Parking apron extension No. 1	426	600	9-7-9	PCC	1942	CE	Overlaid
Parking apron extension No. 2 north	550	600	11-8-11	PCC	1943	CE	Overlaid
Parking apron extension No. 2 south	1,287	480	11-8-11	PCC	1943	CE	Abandoned; 50-ft taxiway rebuilt
All taxiways widened to 75 ft	Varies	25	9-7-9	PCC	1943	CE	
Parking apron, east side	3,200	75	9	PCC	1945	CE	Rebuilt as part of parking apron taxiway
Taxiways 3, 4, and 5	Varies	75	9	PCC	1945	CE	Rebuilt
NE-SW runway	3,675	150	14	PCC	1952	CE	Overlay
NE-SW runway	1,025	150	15	PCC	1952	CE	Overlay
NE-SW runway	Varies	25	16 and 18	PCC	1952	CE	50-ft widening
NE-SW runway	1,175	200	16	PCC	1952	CE	Rebuilt intersection at taxiway 4
NE-SW runway	1,475	200	16 and 18	PCC	1952	CE	Extension
East warm-up apron	500	375	18	PCC	1952	CE	New construction
Taxiway 2	3,800	75	18	PCC	1952	CE	New construction
Taxiway 4 and fillet	Varies	Varies	16	PCC	1952	CE	New construction
Parking apron	4,125	550	14 to 15	PCC	1952-53	CE	Overlay
Taxiway 5	900	75	14 to 15	PCC	1952-53	CE	Overlay
Parking apron (formerly part of N-S runway)	3,150	Varies	13 to 14	PCC	1954	CE	Overlay
Parking apron widening	3,800±	350 and 400	17	PCC	1954	CE	
South hangar access taxiway	1,200	75	17	PCC	1954	CE	
Taxiway 4	225±	75	17	PCC	1954	CE	
Taxiway 6, north portion	500±	75	17	PCC	1954	CE	
Taxiway 6, south portion	250±	75	18	PCC	1954	CE	
Parking apron extension	4,900±	900	17	PCC	1954-55	CE	
Taxiway 3, two sections	150	150	16	PCC	1954-55	CE	Part of old NW-SE runway
Taxiway 3, north section	2,300	75	17	PCC	1954-55	CE	
Taxiway 3, south section	3,700	75	17	PCC	1954-55	CE	
Taxiway 3A	1,400	75	17	PCC	1954-55	CE	
South warm-up apron	400	200	17	PCC	1954-55	CE	
Taxiway 1	650	100	17	PCC	1955	CE	
North warm-up apron	400	200	17	PCC	1955	CE	
South hangar apron	300	175	17	PCC	1955	CE	
Calibration hardstand			17	PCC	1955	CE	
South hangar access aprons (3)	Varies	Varies	16	PCC	1955	CE	
North hangar access aprons (2) with taxiways	Varies	Varies	16	PCC	1955	CE	
NW-SE runway	12,800	200	16 and 17	PCC	1955	CE	Relocated
NW-SE runway, center 50 ft	500	50	24 and 22	PCC	1959	AF	Rebuilt
Taxiway 3, center 25 ft	1,600±	25	24 and 22	PCC	1959	AF	Rebuilt
Taxiway 2	450	25	24 and 22	PCC	1959	AF	
Blast pad reconstruction at NW-SE runway ends	150	200	2	AC	1962	AF	
South apron			2(min)	AC	1962	AF	Overlay
Parking apron	4,550	75	3	AC	1969	AF	Overlay of 17" PCC
Parking apron	1,100±	Varies	3	AC	1969	AF	Overlay of 13/8 and 17" PCC
Parking apron	2,750	250	3	TR	1969	AF	Overlay of 17" PCC
Parking apron	1,225	825	3	TR	1971	AF	Overlay of 17" PCC

Note: CE denotes Corps of Engineers; AF denotes Air Force.

Table 2

SUMMARY OF PHYSICAL PROPERTY DATA

FACILITY Forbes AFB, Kansas			OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA CONSIDERED
FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	CLASSIFICATION	CBR OR K	CLASSIFICATION	CBR OR K	
R1A NW-SE runway; center 50 ft of 1st 225 ft, NW end	225	50				22	Portland cement concrete	720	8	Crushed stone or crushed gravel	75 k_r=55	Clay (CL-CH)		Very good
R2A NW-SE runway; center 50 ft of next 275 ft, NW end	275	50				24	Portland cement concrete	720	6	Crushed stone or crushed gravel	75 k_r=55	Clay (CL-CH)		Very good
R3A NW-SE runway; 1st 500 ft, NW R15D end, 75-ft-wide section each side	500 500	75 75				17	Portland cement concrete	720				Clay (CL-CH)	75 k_r=25	Very good
R4B NW-SE runway; 2nd 500 ft, NW end	500	200				17	Portland cement concrete	720				Clay (CL-CH)	75 k_r=25	Very good
R5C NW-SE runway interior	10,000	200				16	Portland cement concrete	720				Clay (CL-CH)	75 k_r=25	Very good
R6C NW-SE runway interior	800	200				17	Portland cement concrete	720				Clay (CL-CH)	75 k_r=25	Very good
R7B NW-SE runway; 2nd 500 ft, SE end	500	200				17	Portland cement concrete	720				Clay (CL-CH)	75 k_r=25	Very good
R8A NW-SE runway; 1st 500 ft, SE end	500	200				17	Portland cement concrete	720				Clay (CL-CH)	75 k_r=25	Excellent
R9A NE-SW runway; 1st 500 ft, NE end	500	200				18	Portland cement concrete	720	4	Sand (SP)	75 k_r=25	Clay (CL-CH)		Excellent
R10B NE-SW runway; 2nd 500 ft, NE end	500	200				18	Portland cement concrete	720	4	Sand (SP)	75 k_r=25	Clay (CL-CH)		Excellent
R11C NE-SW runway interior	2,200	200				16	Portland cement concrete	720	4	Sand (SP)	75 k_r=25	Clay (CL-CH)		Good
R12C NE-SW runway interior	Varies	150	14 to 15	Portland cement concrete h_E = 15.62	720	8	Portland cement concrete 10-8-10					Clay (CL-CH)	40 k_r=25	Good
R13B NE-SW runway; 2nd 500 ft, SW end	500	150	15	Portland cement concrete h_E = 16.55	720	8	Portland cement concrete 10-8-10					Clay (CL-CH)	40 k_r=25	Excellent

WES FORM 1000
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(1 of 4 sheets)

Table 2 (Continued)

SUMMARY OF PHYSICAL PROPERTY DATA

FACILITY			OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA CONSIDERED
Forbes AFB, Kansas FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	CLASSIFICATION	CBR OR K	CLASSIFICATION	CBR OR K	
R14A NE-SW runway; 1st 500 ft, SW end	500	150	15	Portland cement concrete h_E = 16.55	720	8	Portland cement concrete 10-8-10					Clay (CL-CH)	40 k_f=25	Excellent
T1A Taxiway 1	650	100				17	Portland cement concrete	720				Clay (CL-CH)	75 k_f=25	Excellent
T2A Taxiway 3 Taxiway 3A	Varies 1,400	Varies 75				17	Portland cement concrete	720				Clay (CL-CH)	75 k_f=25	Excellent Very good
T3A Taxiway 3	1,800±	25				24	Portland cement concrete	720	6	Crushed stone	75 k_f=33	Clay (CL-CH)		Excellent
T4A Taxiway 3, two sections Fillet on taxiway 4	150 Varies	150 Varies				16	Portland cement concrete	720				Clay (CL-CH)	75 k_f=25	Excellent
T5A Taxiway 2	3,800	75				18	Portland cement concrete	720	4	Sand (SP)	75 k_f=25	Clay (CL-CH)		Very good
T6A Taxiway 5	900	75	14 to 15	Portland cement concrete h_E = 16.26	720	7	Portland cement concrete 9-7-9					Clay (CL-CH)	40 k_f=25	Good
T7A Taxiway 6	500±	75				17	Portland cement concrete	720	4	Sand (SP)	75 k_f=25	Clay (CL-CH)		Excellent
T8A Taxiway 6	250±	75				18	Portland cement concrete	720	4	Sand (SP)	75 k_f=25	Clay (CL-CH)		Excellent
T9A Apron access taxiway	1,400	75				17	Portland cement concrete	720	8	Crushed stone	75 k_f=50	Clay (CL-CH)		Very good
T10B Apron access taxiway	1,200	75				17	Portland cement concrete	720				Clay (CL-CH)	75 k_f=25	Very good
T11A Taxiway 4	225	75	3	Asphaltic concrete h_E = 19.00		17	Portland cement concrete	720				Clay (CL-CH)	75 k_f=25	
T12A Taxiway 4	525	75	3	Asphaltic concrete h_E = 17.89		16	Portland cement concrete	720				Clay (CL-CH)	75 k_f=25	
A1B Parking apron	Varies	Varies				17	Portland cement concrete	720				Clay (CL-CH)	75 k_f=25	Very good

AFES FORM 1000
MAR 1958

Table 2 (Continued)

SUMMARY OF PHYSICAL PROPERTY DATA

FACILITY			OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA CONSIDERED
Forbes AFB, Kansas FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	CLASSIFICATION	CBR OR K	CLASSIFICATION	CBR OR K	
A2B Parking apron	4,125	550	14 to 15	Portland cement concrete h_E = 15.26	720	7	Portland cement concrete 9-7-9					Clay (CL-CH)	40 K_f=25	Very good
A3B Parking apron and taxiway	1,225 4,450 Varies Varies	825 250 Varies 75	3 3 3 3	Tar rubber (1,010,625 sq ft) Asphaltic concrete h_E = 19.00		17	Portland cement concrete	720				Clay (CL-CH)	75 K_f=25	
A4B Parking apron	Varies	75	3	Tar rubber h_E = 18.93		17	Portland cement concrete	720				Clay (CL-CH)	40 K_f=25	
A5B North warm-up apron South warm-up apron South hangar apron	400 400 300	200 200 175				17	Portland cement concrete	720				Clay (CL-CH)	75 K_f=25	Good Excellent Very good
A6B East warm-up apron	500	375				18	Portland cement concrete	720	4	Sand (SF)	75 K_f=25	Clay (CL-CH)		Good
A7B South hangar access apron	Varies	Varies				16	Portland cement concrete	720				Clay (CL-CH)	75 K_f=25	
A8B North hangar access aprons and taxiway	Varies	Varies				16	Portland cement concrete	720				Clay (CL-CH)	75 K_f=25	
A9B Parking apron	3,150	Varies	3 over 13	Tar rubber over portland cement concrete h_E = 14.77	720	8	Portland cement concrete 10-8-10					Clay (CL-CH)	40 K_f=25	
A10B South apron	900	175	2	Asphaltic concrete h_E = 10.68		9	Portland cement concrete	720				Clay (CL-CH)	75 K_f=25	
A11C Calibration hardstand and taxiway 4	Varies	Varies				17	Portland cement concrete	720				Clay (CL-CH)	75 K_f=25	
A12B Parking apron	400		3 over 13	Asphaltic concrete/ portland cement concrete h_E = 14.77	720	8	Portland cement concrete 10-8-10					Clay (CL-CH)	75 K_f=25	
R16X NE-SW runway overrun, NE end	1,000	200				2	Double bituminous surface treatment					Clay (CL-CH)	5	
R17X NE-SW runway overrun, SW end	1,000	200				2	Double bituminous surface treatment					Clay (CL-CH)	5	
R18X NW-SE runway overrun, SW end	150	200				2	Asphaltic concrete		6 6	Crushed stone base Granular subbase		Clay (CL-CH)	5	

AES FORM 1000
MAR 1958

(3 of 4 sheets)

Table 2 (Continued)

SUMMARY OF PHYSICAL PROPERTY DATA

FACILITY			OVERLAY PAVEMENT			PAVEMENT			BASE			SUBGRADE		GENERAL CONDITION OF AREA CONSIDERED
Forbes AFB, Kansas FACILITY NUMBER AND IDENTIFICATION	LENGTH FT	WIDTH FT	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	DESCRIPTION	FLEX. STR PSI	THICK. IN.	CLASSIFICATION	CBR OR K	CLASSIFICATION	CBR OR K	
819X NW-SE runway overrun, NW end	150	200				2	Asphaltic concrete		6 6	Crushed stone base Granular subbase		Clay (CL-CH)	4	

RES FORM 1000
MAR 1958

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Table 3

DATE: May 1972

SUMMARY OF DATA - RIGID PAVEMENT CONDITION SURVEY

AIRFIELD: Forbes AFB, Kansas

FEATURE NO.	FEATURE DESIGNATION	SLAB SIZE FT	APPROX NO. OF SLABS	PAVE. THICK. IN.	NO. OF SLABS CONTAINING INDICATED DEFECTS																% OF SLABS NO DEFECTS	% OF SLABS NO MAJOR DEFECTS	CONDITION
					I	—	\	Δ	*	K	~	S	J	↓	J	⊕	M	P	O	C	D			
R1A R2A R3A	NW-SE runway; 1st 500 ft, NW end	25 by 25	100	24 22 17	3		1	1			1		8	2	13					1		See remarks	96.9	Very good
R4B	NW-SE runway; 2nd 500 ft, NW end	25 by 25	160	17	3		1	1			1		8	2	13					1			96.9	Very good
R5C	NW-SE runway interior	25 by 25	3258	16	66	2	10	12			23	10	158	30	258	5				13			97.3	Very good
R6C	NW-SE runway interior	25 by 25	256	17	6		1	1			2	2	15	3	25	1				1			97.5	Very good
R7B	NW-SE runway; 2nd 500 ft, SE end	25 by 25	160	17	2						1		4	1	8								98.0	Very good
R8A	NW-SE runway; 1st 500 ft, SE end	25 by 25	160	17	3						1		8	2	13					1			98.2	Excel-lent
R9A	NE-SW runway; 1st 500 ft, NE end	25 by 25	160	18	15	4	1	1			1	1	2	6	19					1			98.7	Excel-lent
R10B	NE-SW runway; 2nd 500 ft, NE end	25 by 25	160	18	15	4	1	1			1	1	2	6	19					1			98.7	Excel-lent
R11C R12C	NE-SW runway interior	25 by 25	3128	16 14/10-8-10	289	68	10	22	2		17	16	43	112	366					24			87.5	Good
R13B	NE-SW runway; 2nd 500 ft, SW end	25 by 25	160	15/10-8-10 18	15	3	1	1			1	1	2	6	19					1			98.8	Excel-lent

REMARKS: Practically all slabs contained map cracking and one or more pop-outs; "D" cracking was evident in practically all slabs that did not contain other defects.

LEGEND:

I	LONGITUDINAL CRACK	~	SHRINKAGE CRACK	M	MAP CRACKING
—	TRANSVERSE CRACK	S	SCALING	P	PUMPING JOINT
\	DIAGONAL CRACK	J	SPALL ON TRANSVERSE JOINT	O	POP-OUT
Δ	CORNER BREAK	↓	SPALL ON LONGITUDINAL JOINT	C	UNCONTROLLED CONTRACTION CRACK
*	SHATTERED SLAB	J	CORNER SPALL	D	"D" CRACKING
K	KEYED JOINT FAILURE	⊕	SETTLEMENT		

WES FORM NO. 2004
JUN 1972

(1 of 3 sheets)

Table 3 (Continued)

DATE: May 1972

SUMMARY OF DATA - RIGID PAVEMENT CONDITION SURVEY

AIRFIELD: Forbes AFB, Kansas

FEATURE NO.	FEATURE DESIGNATION	SLAB SIZE FT	APPROX NO. OF SLABS	PAVE. THICK. IN.	NO. OF SLABS CONTAINING INDICATED DEFECTS																% OF SLABS NO DEFECTS	% OF SLABS NO MAJOR DEFECTS	CONDITION
					I	—	\	Δ	*	K	~	S	J	↓	J	⊕	M	P	O	C	D			
R14A	NE-SW runway; 1st 500 ft, SW end	25 by 25	160	15/10--8-10 18	15	3	1	1			1	1	2	5	19					1		See remarks	99.8	Excellent
T1A	Taxiway 1	25 by 25	108	17	1										3					1			99.1	Excellent
T2A T3A R12C T4A	Taxiway 3	25 by 25 25 by 25 15 by 25	1338	17 24 14 to15 16	13	8	1	1				2	4	2	5					1			98.3	Excellent
T2A	Taxiway 3A	25 by 25	200	17	2			5					1	1	5								96.5	Very good
T5A	Taxiway 2	25 by 25	367	18	11	1	6	9			9			8	16								92.7	Very good
T6A	Taxiway 5	25 by 25	245	14 to 15/7	23	5						23	3	13	27								88.6	Good
T7A T8A	Taxiway 6	12-1/2 by 25 25 by 25	152	17 and 18		2							3	5	34								98.7	Excellent
T9A T10B	Apron access taxiway	25 by 25	349	17	3	2	2	11			10		15	21	90					1			94.9	Very good
A1B	Parking apron	25 by 25	7963	14 to 15/9-7-9 17	252	41	24	110	4		26	35	86	83	974					52			94.6	Very good

REMARKS:

LEGEND:

I	LONGITUDINAL CRACK	~	SHRINKAGE CRACK	M	MAP CRACKING
—	TRANSVERSE CRACK	S	SCALING	P	PUMPING JOINT
\	DIAGONAL CRACK	J	SPALL ON TRANSVERSE JOINT	O	POP-OUT
Δ	CORNER BREAK	↓	SPALL ON LONGITUDINAL JOINT	C	UNCONTROLLED CONTRACTION CRACK
*	SHATTERED SLAB	J	CORNER SPALL	D	"D" CRACKING
K	KEYED JOINT FAILURE	⊕	SETTLEMENT		

WES FORM NO. 2004
JUN 1972

(2 of 3 sheets)

Table 3 (Continued)

DATE: May 1972

SUMMARY OF DATA - RIGID PAVEMENT CONDITION SURVEY

AIRFIELD: Forbes AFB, Kansas

FEATURE NO.	FEATURE DESIGNATION	SLAB SIZE FT	APPROX NO. OF SLABS	PAVE. THICK. IN.	NO. OF SLABS CONTAINING INDICATED DEFECTS																% OF SLABS NO DEFECTS	% OF SLABS NO MAJOR DEFECTS	CONDITION
					I	—	\	Δ	*	K	~	S	J	↓	J	⊕	M	P	O	C	D			
A2B	Parking apron	25 by 25	5916	14 to 15/9-7-9	458	61	12	6	5		120	226	122	85	312					2		See remarks	92.6	Very good
A5B	North warm-up apron	25 by 25	131	17	3	3	1	6			3		1	1	7								90.1	Good
A5B	South warm-up apron	25 by 25 12-1/2 by 25	158	17	1			1			2				3					1			98.8	Excellent
A6B	East warm-up apron	25 by 25	467	18	19	3	5	5			11	50	3	75	63	1				1			93.2	Good
A5B	South hangar apron	25 by 25	399	16	21	2	4	3			14		24	3	43					3			92.5	Very good

REMARKS:

LEGEND:

I	LONGITUDINAL CRACK	~	SHRINKAGE CRACK	M	MAP CRACKING
—	TRANSVERSE CRACK	S	SCALING	P	PUMPING JOINT
\	DIAGONAL CRACK	J	SPALL ON TRANSVERSE JOINT	O	POP-OUT
Δ	CORNER BREAK	↓	SPALL ON LONGITUDINAL JOINT	C	UNCONTROLLED CONTRACTION CRACK
*	SHATTERED SLAB	J	CORNER SPALL	D	"D" CRACKING
K	KEYED JOINT FAILURE	⊕	SETTLEMENT		

WES FORM NO. 2004
JUN 1972

(3 of 3 sheets)

Table 4

SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: Forbes AFB, Kansas DATE OF EVALUATION MONTH: May YR: 1972			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS										
			TRICYCLE ARRANGEMENT									BICYCLE	
FEATURE		PAVEMENT OPERATIONAL USE	SINGLE 100-PSI TIRE PRESSURE	SINGLE 100-SQ-IN. CONTACT AREA	SINGLE 241-SQ-IN. CONTACT AREA	TW 28-IN. C-C 226-SQ-IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 60-IN. SPACING 400-SQ-IN. CONTACT AREA	TW 37-IN. C-C 267-SQ-IN. CONTACT AREA EACH TIRE	TW 44-IN. C-C 630-SQ-IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33-IN. + 58 IN. 208-SQ-IN. CONTACT AREA EACH TIRE	C-5A GEAR CONFIGURATION	TWIN TWIN SPCG 57-42-57 267-SQ-IN. CONTACT AREA EACH TIRE	REMARKS
NO.	DESIGNATION		1	2	3	4	5	6	7	8	9	10	
R1A	NW-SE runway; center 50 ft of 1st 225 ft, NW end	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	430,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000	230,000+	380,000+	800,000+	410,000	
R2A	NW-SE runway; center 50 ft of next 275 ft, NW end	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	480,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	410,000	
R3A	NW-SE runway; 1st 500 ft, NW end	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	205,000	230,000+	330,000	800,000+	295,000	
		Frost capacity	140,000	85,000+	155,000+	185,000	200,000+	165,000	200,000	255,000	740,000	230,000	
R4B	NW-SE runway; 2nd 500 ft, NW end	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	245,000	230,000+	380,000+	800,000+	310,000	
		Frost capacity	140,000	85,000+	155,000+	185,000	200,000+	165,000	200,000	255,000	740,000+	230,000	
R5C	NW-SE runway interior	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	295,000	230,000+	380,000+	800,000+	390,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000+	200,000+	245,000	230,000+	370,000	800,000+	310,000	
R6C	NW-SE runway interior	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	320,000	230,000+	380,000+	800,000+	420,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000+	200,000+	265,000	230,000+	380,000+	800,000+	330,000	
R7B	NW-SE runway; 2nd 500 ft, SE end	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	245,000	230,000+	380,000+	800,000+	310,000	
		Frost capacity	140,000+	85,000+	155,000+	185,000	200,000+	200,000	230,000+	300,000	800,000+	(a)	
R8A	NW-SE runway 1st 500 ft 31 end	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	205,000	230,000+	330,000	800,000+	295,000	
		Frost capacity	140,000	85,000+	155,000+	185,000	200,000+	165,000	200,000	255,000	740,000	230,000	
R9A	NE-SW runway; 1st 500 ft, NE end	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	220,000	230,000+	350,000	800,000+	320,000	
		Frost capacity	155,000	85,000+	155,000+	200,000	200,000+	220,000	230,000+	260,000	800,000	270,000	
R10B	NE-SW runway, 2nd 500 ft, NE end	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	270,000	230,000+	380,000+	800,000+	340,000	
		Frost capacity	155,000	85,000+	155,000+	200,000	200,000+	220,000	230,000+	320,000	800,000+	270,000	
R11C	NE-SW runway interior	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	295,000	230,000+	380,000+	800,000+	390,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000+	200,000+	245,000	230,000+	370,000	800,000+	310,000	

Note: + sign denotes allowable gross loading greater than maximum gross weight of any existing aircraft having indicated gear configuration.
(a) denotes allowable gross loading less than minimum gross weight of any existing aircraft having indicated gear configuration.

WES FORM NO. 399 JUNE 1972 EDITION OF AUG 1960 IS OBSOLETE.

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Table 4 (Continued)

SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: Forbes AFB, Kansas DATE OF EVALUATION MONTH: May YR: 1972			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS										
			TRICYCLE ARRANGEMENT									BICYCLE	
FEATURE		PAVEMENT OPERATIONAL USE	SINGLE 100-PSI TIRE PRESSURE	SINGLE 100-SQ-IN. CONTACT AREA	SINGLE 241-SQ-IN. CONTACT AREA	TW 28-IN. C-C 226-SQ-IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 60-IN. SPACING 400-SQ-IN. CONTACT AREA	TW 37-IN. C-C 267-SQ-IN. CONTACT AREA EACH TIRE	TW 44-IN. C-C 430-SQ-IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33-IN. × 46-IN. 208-SQ-IN. CONTACT AREA EACH TIRE	C-5A GEAR CONFIGURATION	TWIN TWIN SPCG 37-62-37 257-SQ-IN. CONTACT AREA EACH TIRE	REMARKS
NO.	DESIGNATION		1	2	3	4	5	6	7	8	9	10	
R12C	NE-SW runway interior	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	255,000	230,000+	380,000+	800,000+	320,000	
		Frost capacity	155,000+	85,000+	155,000+	215,000	200,000+	235,000	230,000+	360,000	800,000+	295,000	
R13B	NE-SW runway; 2nd 500 ft, SW end	Capacity	140,000	85,000+	155,000+	190,000	200,000+	205,000	230,000+	330,000	800,000+	265,000	
		Frost capacity	135,000	85,000+	155,000+	175,000	200,000+	190,000	230,000+	290,000	800,000+	240,000	
R14A	NE-SW runway; 1st 500 ft, SW end	Capacity	140,000	85,000+	145,000	190,000	200,000+	175,000	220,000	280,000	800,000+	310,000	
		Frost capacity	135,000	85,000+	145,000	175,000	200,000+	175,000	220,000	280,000	800,000+	240,000	
T1A	Taxiway 1	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	205,000	230,000+	330,000	800,000+	295,000	
		Frost capacity	140,000	85,000+	155,000+	185,000	200,000+	165,000	200,000	255,000	740,000	230,000	
T2A	Taxiway 3 Taxiway 3A	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	205,000	230,000+	330,000	800,000+	295,000	
		Frost capacity	140,000	85,000+	155,000+	185,000	200,000+	165,000	200,000	255,000	740,000	230,000	
T3A	Taxiway 3	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	480,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	440,000	
T4A	Taxiway 3, two sections Fillet on Taxiway 4	Capacity	145,000	85,000+	150,000	200,000	200,000+	185,000	230,000+	310,000	800,000+	270,000	
		Frost capacity	130,000	85,000+	130,000	170,000	200,000+	155,000	190,000	235,000	690,000	(a)	
T5A	Taxiway 2	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	220,000	230,000+	350,000	800,000+	320,000	
		Frost capacity	155,000	85,000+	155,000+	200,000	200,000+	220,000	230,000+	320,000	800,000+	270,000	
T6A	Taxiway 5	Capacity	125,000	85,000+	130,000	170,000	200,000+	155,000	195,000	250,000	740,000	(a)	
		Frost capacity	115,000	85,000+	130,000	155,000	200,000	155,000	195,000	250,000	740,000	(a)	
T7A	Taxiway 6	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	205,000	230,000+	330,000	800,000+	295,000	
		Frost capacity	140,000	85,000+	155,000+	185,000	200,000+	165,000	200,000	255,000	740,000	230,000	
T8A	Taxiway 6	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	220,000	230,000+	350,000	800,000+	320,000	
		Frost capacity	155,000	85,000+	155,000+	200,000	200,000+	220,000	230,000+	320,000	800,000+	270,000	
T9A	Apron access taxiway	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	205,000	230,000+	330,000	800,000+	295,000	
		Frost capacity	155,000	85,000+	155,000+	200,000	200,000+	205,000	230,000+	330,000	800,000+	290,000	

Table 4 (Continued)

SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: Forbes AFB, Kansas DATE OF EVALUATION MONTH: May YR: 1972			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS										
			TRICYCLE ARRANGEMENT									BICYCLE	
FEATURE		PAVEMENT OPERATIONAL USE	SINGLE 100-PSI TIRE PRESSURE	SINGLE 100-SQ-IN. CONTACT AREA	SINGLE 241-SQ-IN. CONTACT AREA	TW 28-IN. C-C 226-SQ-IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 60-IN. SPACING 600-SQ-IN. CONTACT AREA	TW 37-IN. C-C 267-SQ-IN. CONTACT AREA EACH TIRE	TW 56-IN. C-C 430-SQ-IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33-IN. C-C 40-IN. 238-SQ-IN. CONTACT AREA EACH TIRE	DUAL GEAR CONFIGURATION	TWIN TWIN SPCG 37-42-37 267-SQ-IN. CONTACT AREA EACH TIRE	REMARKS
NO.	DESIGNATION		1	2	3	4	5	6	7	8	9	10	
T10B	Apron access taxiway	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	330,000+	230,000+	380,000+	800,000+	310,000	
		Frost capacity	140,000	85,000+	155,000+	185,000	200,000+	200,000	230,000+	310,000	800,000+	250,000	
T11A	Taxiway 4	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	235,000	230,000+	380,000	800,000+	360,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000+	200,000+	235,000	230,000+	345,000	800,000+	299,000	
T12A	Taxiway 4	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	215,000	230,000+	350,000	800,000+	330,000	
		Frost capacity	155,000	85,000+	155,000+	200,000	200,000+	215,000	230,000+	320,000	800,000+	270,000	
A1B	Parking apron	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	330,000+	230,000+	380,000+	800,000+	310,000	
		Frost capacity	140,000	85,000+	155,000+	185,000	200,000+	200,000	230,000	310,000	800,000+	250,000	
A2B	Parking apron	Capacity	125,000	85,000+	155,000	170,000	200,000+	185,000	225,000	290,000	800,000+	235,000	
		Frost capacity	115,000	85,000+	145,000	155,000	200,000+	170,000	205,000	260,000	740,000	(a)	
A3B	Parking apron and taxiway	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	280,000	230,000+	380,000+	800,000+	350,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000+	200,000+	240,000	230,000+	350,000	800,000+	300,000	
A4B	Parking apron	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	250,000	230,000+	380,000	800,000+	320,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000	200,000+	235,000	230,000+	340,000	800,000+	290,000	
A5B	North and south warm-up aprons, south hangar apron	Capacity	155,000+	85,000+	155,000+	220,000	200,000+	330,000+	230,000+	380,000+	800,000+	310,000	
		Frost capacity	140,000	85,000+	155,000+	185,000	200,000+	200,000	230,000+	310,000	800,000+	250,000	
A6B	East warm-up apron	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	270,000	230,000+	380,000+	800,000+	340,000	
		Frost capacity	155,000	85,000+	155,000+	200,000	200,000+	220,000	230,000+	320,000	800,000+	270,000	
A7B	South hangar access apron	Capacity	145,000	85,000+	155,000+	200,000	200,000+	220,000	230,000+	360,000	800,000+	290,000	
		Frost capacity	125,000	85,000+	155,000	170,000	200,000+	190,000	230,000	295,000	800,000+	240,000	
A8B	North hangar access aprons and taxiway	Capacity	145,000	85,000+	155,000+	200,000	200,000+	220,000	230,000+	360,000	800,000+	290,000	
		Frost capacity	125,000	85,000+	155,000	170,000	200,000+	190,000	230,000	295,000	800,000+	240,000	
A9B	Parking apron	Capacity	120,000	85,000+	145,000	160,000	200,000+	175,000	215,000	280,000	800,000+	(a)	
		Frost capacity	110,000	85,000+	135,000	150,000	200,000+	165,000	200,000	255,000	730,000	(a)	

WES FORM NO. JUNE 1972 999 EDITION OF AUG 1960 IS OBSOLETE.

(3 of 4 sheets)

Table 4 (Continued)

SUMMARY OF PAVEMENT EVALUATION

NAME OF AIRFIELD: Forbes AFB, Kansas DATE OF EVALUATION MONTH: May YR: 1972			LOAD-CARRYING CAPACITY IN LB OF GROSS PLANE LOAD FOR INDICATED LANDING GEAR TYPES AND CONFIGURATIONS										
			TRICYCLE ARRANGEMENT									BICYCLE	
FEATURE		PAVEMENT OPERATIONAL USE	SINGLE 100-PSI TIRE PRESSURE	SINGLE 100-SQ-IN. CONTACT AREA	SINGLE 241-SQ-IN. CONTACT AREA	TW 28-IN. C-C 226-SQ-IN. CONTACT AREA EACH TIRE	SINGLE TANDEM 60-IN. SPACING 400-SQ-IN. CONTACT AREA	TW 37-IN. C-C 267-SQ-IN. CONTACT AREA EACH TIRE	TW 44-IN. C-C 630-SQ-IN. CONTACT AREA EACH TIRE	TWIN TANDEM 33-IN. x 48-IN. 208-SQ-IN. CONTACT AREA EACH TIRE	C-5A GEAR CONFIGURATION	TWIN TWIN SPCG 37-42-37 267-SQ-IN. CONTACT AREA EACH TIRE	REMARKS
NO.	DESIGNATION		1	2	3	4	5	6	7	8	9	10	
A10B	South apron	Capacity	75,000	60,000	105,000	105,000	160,000	120,000	155,000	215,000	630,000	(a)	
		Frost capacity	65,000	45,000	85,000	90,000	135,000	100,000	125,000	165,000	480,000	(a)	
A11C	Calibration hardstand and taxiway 4	Capacity	155,000+	85,000+	155,000+	220,000+	200,000+	320,000	230,000+	380,000+	800,000+	410,000	
		Frost capacity	155,000+	85,000+	155,000+	220,000+	200,000+	265,000	230,000+	380,000+	800,000+	330,000	
A12B	Parking apron	Capacity	125,000	85,000+	155,000+	170,000	200,000+	190,000	230,000+	320,000	800,000+	250,000	
		Frost capacity	110,000	85,000+	135,000	150,000	200,000+	165,000	200,000	255,000	730,000	(a)	

WES FORM NO. 999
JUNE 1972

EDITION OF AUG 1963 IS OBSOLETE.

(4 of 4 sheets)

Photo 1. "D" cracking on parking apron

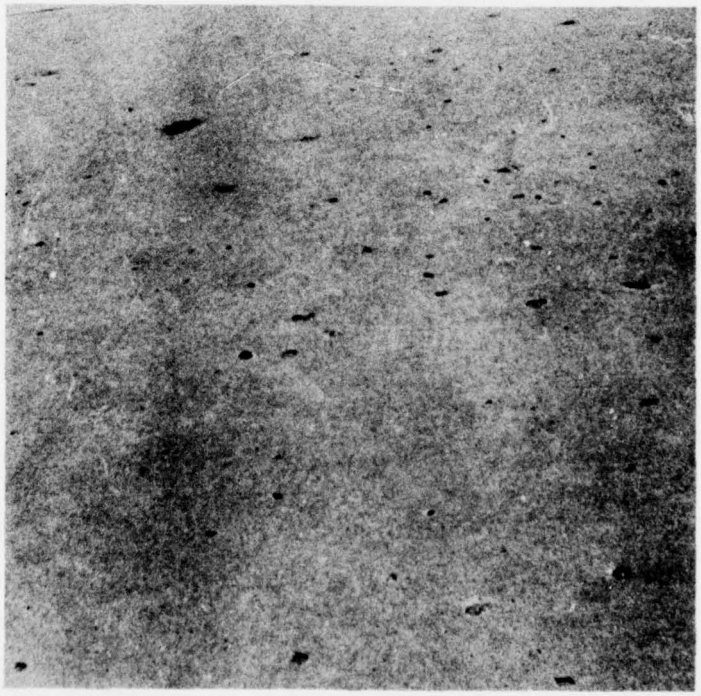


Photo 2. Pop-outs on parking apron

Photo 3. AC repairs at slab corners of parking apron

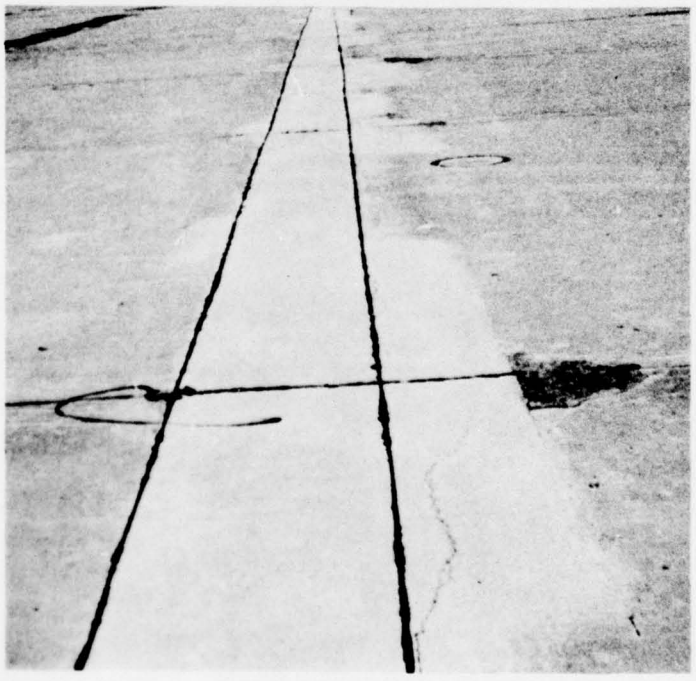
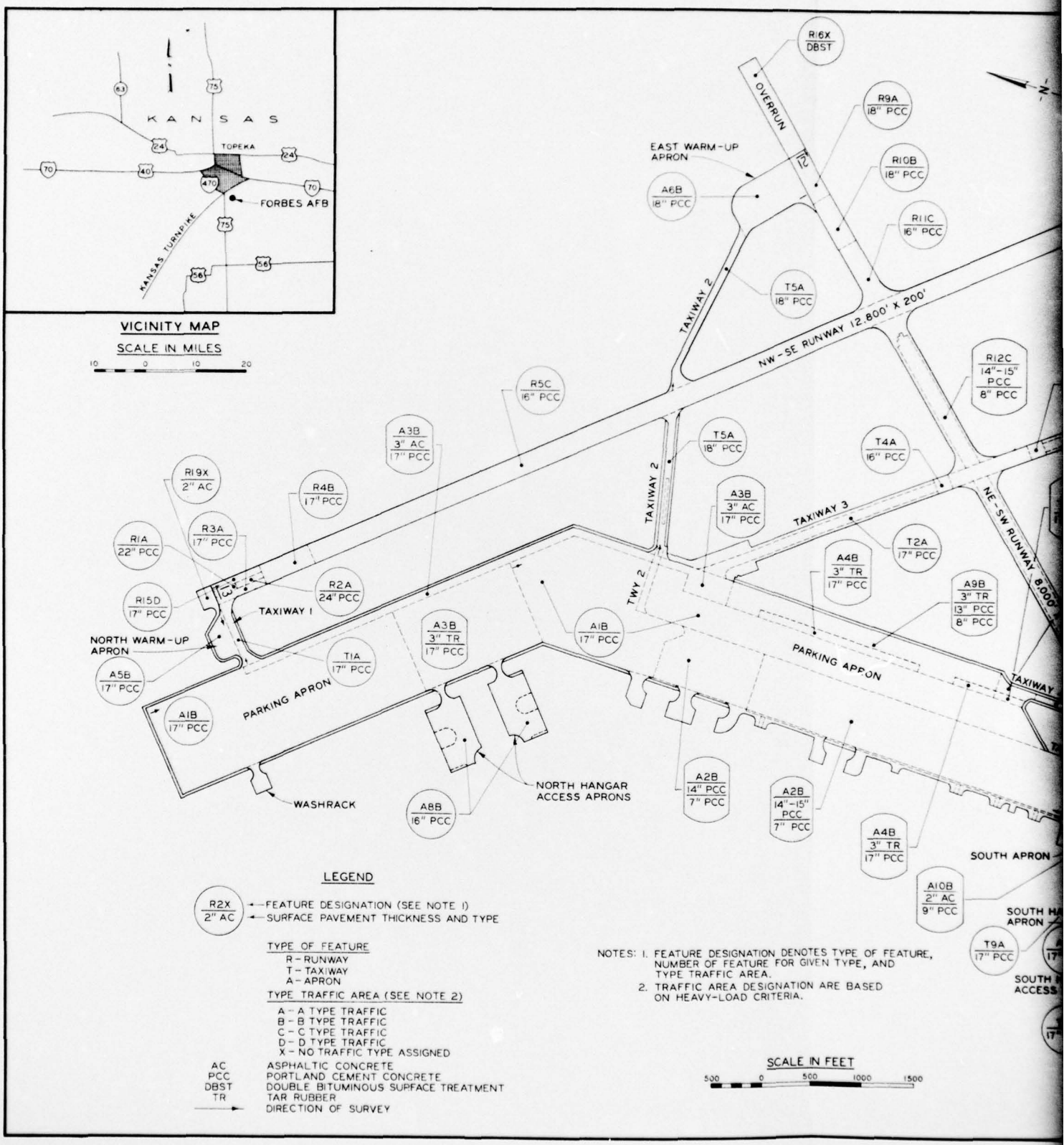
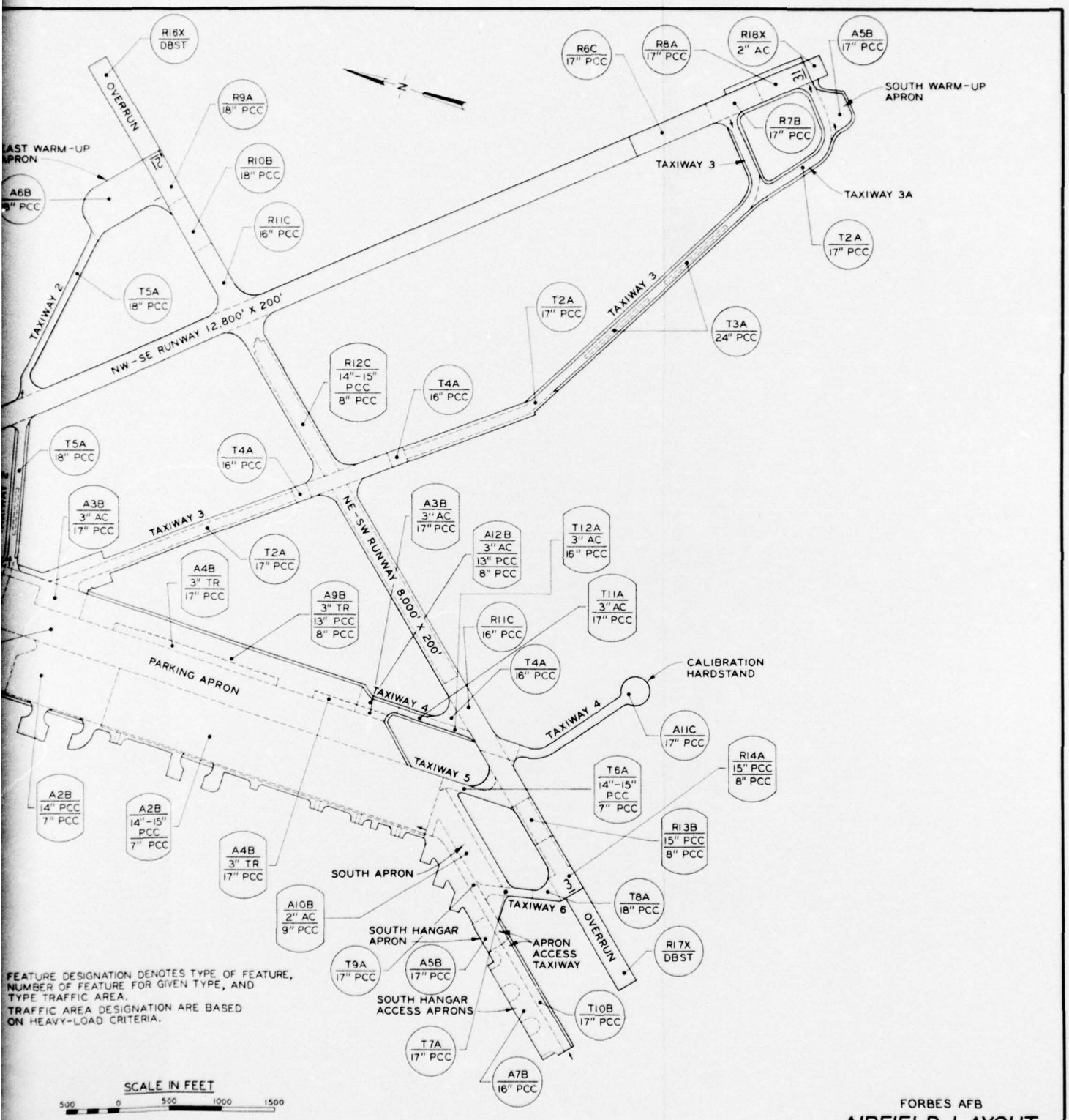


Photo 4. PCC repairs along joints in parking apron

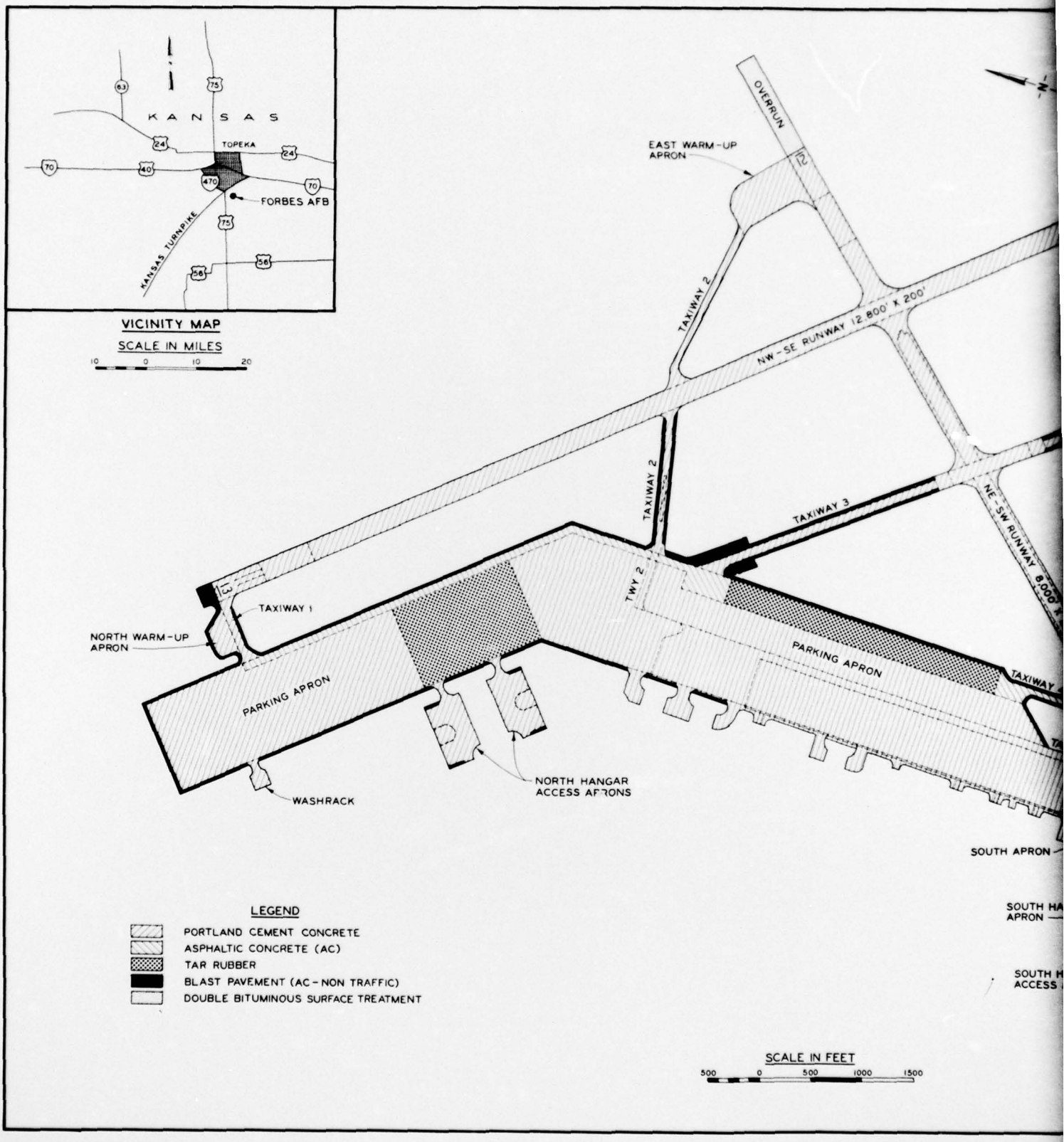

KANSAS
TOPEKA
FORBES AFB
KANSAS TURNPIKE
VICINITY MAP
SCALE IN MILES
10 0 10 20
R16X / DBST
OVERRUN
R9A / 18" PCC
EAST WARM-UP APRON
A6B / 18" PCC
R10B / 18" PCC
R11C / 16" PCC
T5A / 18" PCC
TAXIWAY 2
NW-SE RUNWAY 12,800' X 200'
R12C / 14"-15" PCC / 8" PCC
R5C / 16" PCC
A3B / 3" AC / 17" PCC
T5A / 18" PCC
T4A / 16" PCC
R19X / 2" AC
R4B / 17" PCC
R1A / 22" PCC
R3A / 17" PCC
TAXIWAY 2
A3B / 3" AC / 17" PCC
TAXIWAY 3
NE-SW RUNWAY 8,000'
T2A / 17" PCC
A4B / 3" TR / 17" PCC
A9B / 3" TR / 13" PCC / 8" PCC
R15D / 17" PCC
R2A / 24" PCC
TAXIWAY 1
TWY 2
A3B / 3" TR / 17" PCC
A1B / 17" PCC
NORTH WARM-UP APRON
A5B / 17" PCC
T1A / 17" PCC
PARKING APRON
PARKING APRON
TAXIWAY
A1B / 17" PCC
WASHRACK
A8B / 16" PCC
NORTH HANGAR ACCESS APRONS
A2B / 14" PCC / 7" PCC
A2B / 14"-15" PCC / 7" PCC
A4B / 3" TR / 17" PCC
SOUTH APRON
A10B / 2" AC / 9" PCC
T9A / 17" PCC
SOUTH HA APRON
SOUTH ACCESS
LEGEND
R2X / 2" AC
FEATURE DESIGNATION (SEE NOTE 1)
SURFACE PAVEMENT THICKNESS AND TYPE
TYPE OF FEATURE
R - RUNWAY
T - TAXIWAY
A - APRON
TYPE TRAFFIC AREA (SEE NOTE 2)
A - A TYPE TRAFFIC
B - B TYPE TRAFFIC
C - C TYPE TRAFFIC
D - D TYPE TRAFFIC
X - NO TRAFFIC TYPE ASSIGNED
AC ASPHALTIC CONCRETE
PCC PORTLAND CEMENT CONCRETE
DBST DOUBLE BITUMINOUS SURFACE TREATMENT
TR TAR RUBBER
DIRECTION OF SURVEY
NOTES: 1. FEATURE DESIGNATION DENOTES TYPE OF FEATURE, NUMBER OF FEATURE FOR GIVEN TYPE, AND TYPE TRAFFIC AREA.
2. TRAFFIC AREA DESIGNATION ARE BASED ON HEAVY-LOAD CRITERIA.
SCALE IN FEET
500 0 500 1000 1500

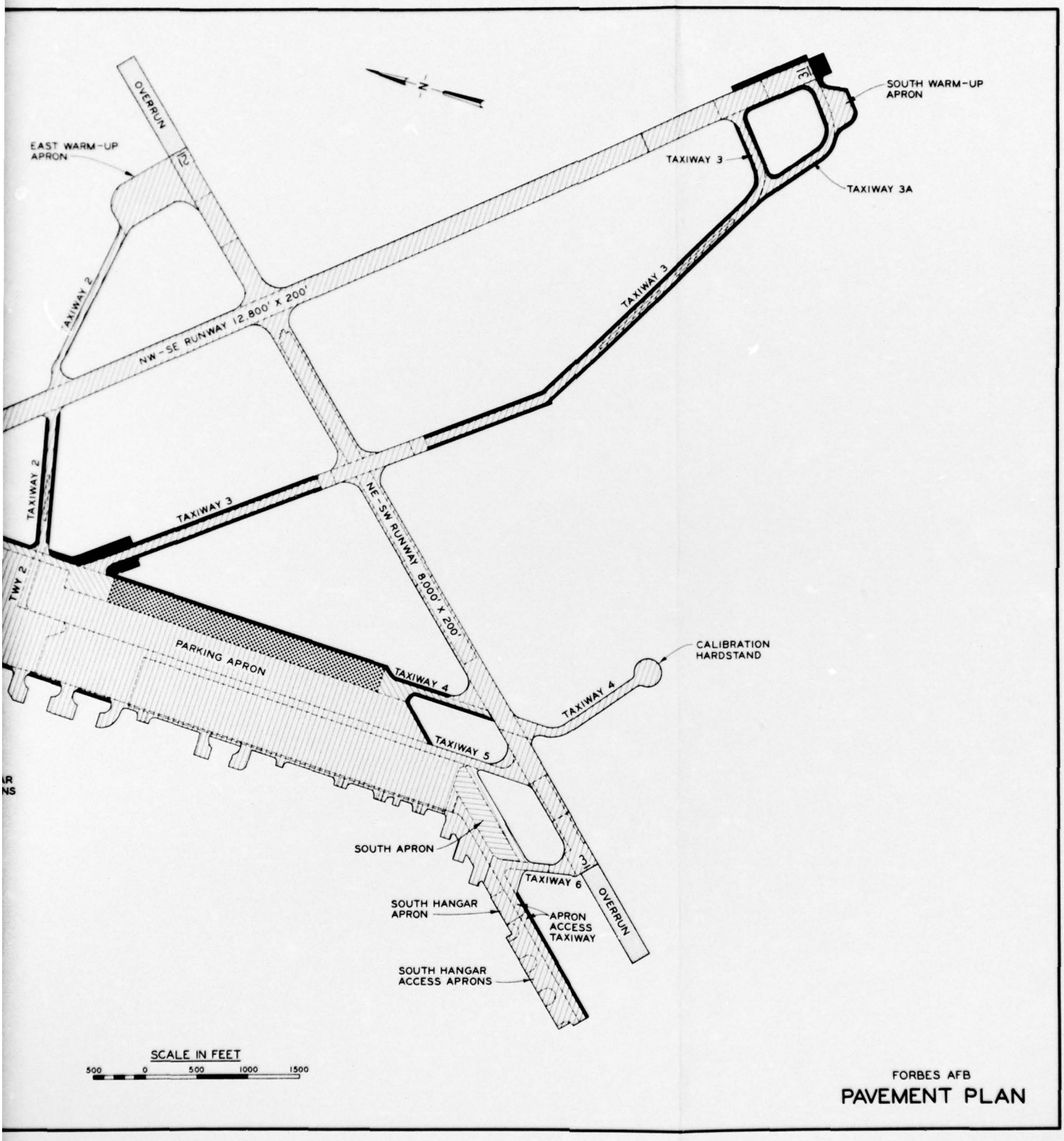


FORBES AFB

AIRFIELD LAYOUT

PLATE 1


KANSAS
TOPEKA
FORBES AFB
KANSAS TURNPIKE
VICINITY MAP
SCALE IN MILES
10 0 10 20
OVERRUN
EAST WARM-UP APRON
TAXIWAY 2
NW-SE RUNWAY 12,800' X 200'
TAXIWAY 3
NE-SW RUNWAY 8,000'
TWY 2
TAXIWAY 1
NORTH WARM-UP APRON
PARKING APRON
WASHRACK
NORTH HANGAR ACCESS APRONS
SOUTH APRON
SOUTH HA APRON
SOUTH H ACCESS
LEGEND
PORTLAND CEMENT CONCRETE
ASPHALTIC CONCRETE (AC)
TAR RUBBER
BLAST PAVEMENT (AC-NON TRAFFIC)
DOUBLE BITUMINOUS SURFACE TREATMENT
SCALE IN FEET
500 0 500 1000 1500



FORBES AFB

PAVEMENT PLAN

PLATE 2